



# Accelerator Physics Center General Meeting

March 11, 2008

Vladimir Shiltsev



# Why we are here?

## Why now?

- As organization, we have not met since June 2007
- As a partner, we did not talk at such level – general discussion - to other Divisions at all
- We have a lot of progress to report
- We have plans and issues to discuss
  - FY08 budget just settled
  - FY09 and beyond picture become better understood
  - Next 6 mos will be turbulent – and that's worthy to discuss

# Outline:

- VS - A reminder what APC is for
- APC Department Heads and Group Leaders reports:
  - Bob Webber (HINS)
  - Steve Geer, Andreas Jansson, Alan Bross (Muon R&D)
  - Yuri Alexahin, Panagiotis Spentzouris (Theory/Modeling)
  - Tanaji Sen (LARP)
  - Nikolai Solyak (ILC Physics)
  - Nikolai Mokhov (Energy Deposition)
  - Philippe Piot (Advanced Accelerator R&D)
  - Valery Lebedev (Education)
  - Bill Barletta (US PAS)
- VS – Organization challenges:
  - Layoffs, furloughs, org.structure, budgets, etc
- Questions and answers, critique & discussion

# APC Mission

- Coordinate and conduct accelerator R&D aimed at next-generation and beyond accelerator facilities
- Provide accelerator physics support for existing operational programs and the evolution thereof
- Train accelerator scientists and engineers
- Provide leadership and coordination in establishing the necessary facilities for a broad range of accelerator R&D that can be accessed by both Fermilab and the world HEP community



# APC's Program

- APC's program is diverse, we play primary role in:
  - LARP Accelerator Systems instruments, commissioning, upgrade
  - HINS design and MDB test facility
  - Muon collider design R&D, development of MTA test facility
  - Development of generic theoretical and simulation tools for advanced accelerator calculations in areas of energy deposition, beam-beam and space-charge effects, linac emittance evolution, etc. (with CD)
  - Advanced accelerator R&D at the NML facility and possibly elsewhere
  - Accelerator theory and education: Host the USPAS Office, Accelerator PhD program, Peoples Fellows, and other accelerator education initiatives



# APC's Program

- Programs supported by the APC include:
  - Accelerator physics for Run II, ANU and Project X
  - Simulations, design support & beam experiments for ILC
- AD, TD, CD and PPD staff participate in APC activities. Both the AD and TD provide engineering and technical support for APC.
- The APC is responsible for coordination of inter-institutional collaborations in Adv. Accel. R&D
  - In particular, the APC works closely with the Argonne Accelerator Institute to coordinate mutual undertakings in accelerator research





# APC Organization

## ACCELERATOR PHYSICS CENTER

V.Shiltsev, Director  
M.Church, Deputy Director  
M.Bruce, Admin Associate  
(A.Nestander), Budget Mgr.

### ILC Beam Physics Department

(N.Solyak), Head

ILC Modeling Group  
M.Church (GL)

### LHC Accelerator Group

T.Sen (GL)

### Theory/Simulation Group

Yu.Alexahin (GL)

### Energy Deposition Group

N.Mokhov (GL)

### Exper. AAR&D Group

P.Piot (GL) x6389

### Muon Accelerator R&D Department

S.Geer, Head

### MCTF Experiment Group

A.Jansson (GL)

### NFMCC Group

A.Bross (GL)

### HINS Department

R.Webber, Head

### US PAS Office

S.Winchester (GL)  
W.Barletta, Director (GS)

### Accel.Education Dept.

(V.Lebedev), Head

Accel.PhD Program  
(A.Tollestrup, Chair)

Peoples Fellowship  
(M.Church, Comm.Chair)

Lee Teng Internship  
(E.Prebys, Comm.Chair)

Accel.Summer Students  
(A Shemyakin, Prgm Ldr)



# GENERAL

- Budget situation
- Layoffs
- Furlough and vacations
- Safety
- etc

# Budget Situation

- FNAL budget cut for FY2008:
  - FY07 353M\$; FY08 omnibus 310M\$ vs PBR 370M\$
  - No ILC, No SC RF, No NoVA in 2008
- Affects not only ILC and NOvA but the rest of the lab as well
- FY09 PBR is good, but CR is expected
- Ways to live it thru 20-25M\$/yr shortage:
  - Find the money (FY08 suppl. funding still possible)
  - Staff reduction (10% of the staff, affect only FY09 )
  - Furlough (1 wk /2 mos = 12%), no vacation accrual
  - Cuts all over the place
  - (re)think mid- and longer-term future

# Layoffs

- Jan'08 Director formed a Workforce Reduction Task Force:
  - Charged to give him recommendations on RIF
  - Dozen “wisemen”, chaired by Bob K ephart
- Div/Sec/Center directors presented 5/10/15% RIF plans
- WRTF presented recommendations in Feb
  - About 10% RIF for all DSC, all job categories
  - APC target is 4 (out of 43)
- DSC directors presented RIF plans to Director late Feb:
  - Guidance: job functions, mission fit, performance
  - APC plan developed by me and Mike Church, DH input
- Scientific staff RIFs to be reviewed by special committee
- DoE Approval in March-April → notices April-May

# Related

- Though hiring freeze has not been introduced:
  - All openings were pulled out for now (till April?)
  - Offers sent are to be respected
- APC recent hires:
  - Yin-e Sun (ANL, Peoples Fellow, started)
  - Andrea Latina (CERN, Peoples Fellow, exp. May'08)
  - Moses Chung (PPPL, Res.Associate, exp. May'08)
- We are actively seeking Joint Appointments (NIU,IIT,NW)
- Promotions not cancelled, but
  - Only ½ yr funds distributed in Dec, the rest in question
- Reward and Recognition awards:
  - Not cut, are being awarded

# APC FY08 budget

- Out of total APC budget, 1400 k\$ available for M&S :
  - Not incl. 100k\$ carryforward and 130k\$ contingency
  - Some 412k\$ spent so far (~30%, 5 mos thru FY)
- Biggest line items:
  - 530k\$ - Muon Accelerator R&D (whole lab)
  - 328k\$ - Accelerator PhD Program
  - 198k\$ - general R&D (TEL, GM, HTS, dB/dt, etc)
  - 107k\$ - travel (coord. by me & Margie - not enough)
  - 104k\$ - Lee Teng and International summer students
  - 35k\$ - HINS (most of M&S in TD)
  - 30k\$ - new PCs (coord. By Mike K riss & Margie)
  - 26k\$ - office supplies, misc



# APC Major Goals for FY08

- **Support HINS and Project X:**
  - Achieve 2.5MeV beam from RFQ, m-cavity test of vector modulator
  - Build and install new e-cloud diagnostics in MI, beam studies
  - Simulations toward Project-X CD0 (e-cloud, optics, losses, stripping, SC)
- **Muon R&D:**
  - Get beam in MTA for high-pressure RF studies; do MUCOOL tests; MICE
  - Design 6D HCC experiment; construct 4 test coils; HTS collab; 10-yr plan
- **Support Run II:**
  - Upgrade and commission TELs for 6-12 bunch B-B-compensation
  - Take part in keeping operations up, evolutionary upgrades
- **LHC:**
  - Bent crystal studies in Tev; IR design; LTV for LHC beam commissioning
- **Education:**
  - 8 PhD students
  - first 5 Lee Teng scholars in Summer '08 & International summer students





# What we would like to do but can not do with this budget

- **MDB facility (HINS) schedule delays:**
  - MDB progress is resource driven (short of \$\$ and people, already delayed)
  - Funding cap imposed by DoE (limits both M&S and SWF)
- **Muon R&D significantly underfunded:**
  - 700k\$ short due to funding cap (also by DoE)
  - MCTF plan in jeopardy, MANX &/or HCC section construction in question
  - HTS collaboration formed but no funds available now, working in the background
- **Advanced Accelerator R&D on ropes:**
  - Previous plans for NML extension on hold (died?)
  - Need to reinvent the NML program and justify A0
- **Travel at the rate 1 trip/ person**
  - In the year of EPAC, BIW, nuFact, other major events

# Related

- Office space :
  - Most of the APC & Co on WH13 and WH12
  - ~10 spread over AD and TD
  - there is space for new hires, summer students – will see, no reliable meeting room (Fish Tank no good)
  - talking with PPD to free up WH13 machine shop
  - want to have Project-X design people closer
- Propaganda:
  - FermiToday - Wed. Column space rotation
  - FermiToday - Topic articles (need more! )
  - Great Webpage (thanks to Kevin & Margie, need to fill)
  - APC HQ not very visible on WH13



APC logo



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## Accelerator Physics Center at Fermilab

The goal of the Accelerator Physics Center is to provide enhanced emphasis on, and support of, accelerator R & D activities aimed at Fermilab's future beyond the end of the current decade. The APC will provide both a physical location and an organizational structure that can accommodate accelerator scientists and engineers, either from Fermilab or outside institutions. The APC will contribute to the improvement of performance of the existing accelerator complex, and the development of new technologies and accelerator concepts that could enable new forefront facilities beyond the current decade.

### News And Events

**February 18, 2008**

Join the Division of Beams of Physics - Special Opportunity ([More Information](#))

**February 18, 2007**

American Physical Society - Member Units - [Division of Physics of Beams](#)

### Education



- [Summer Student Program](#)
- [Lee Teng Internship](#)
- [Accelerator PhD Program](#)
- [USPAS - U.S. Particle Accelerator School](#)
- [Pappas Fellowship](#)

### Groups



High Intensity Neutrino Source (HINS)  
[Learn More](#)



ILC Beam Physics  
[Learn More](#)



Muon Accelerator R & D  
[Learn More](#)



Energy Deposition  
[Learn More](#)



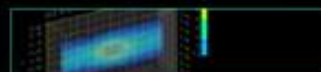
LHC Accelerator Group  
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Theory/Simulation Group  
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Experimental AAR+D Group  
[Learn More](#)



CPA Group  
[Learn More](#)

	FY2005	FY2006	FY2007	FY2008 to Date	GOAL
TRC Cases	28	29	32	6	<10
DART Cases	11	7	12	2	<5

**Fermilab Leading/Lagging Indicators**  
**from 10/01/2007 to 03/10/2008**  
**(Employees Only, No Subcontractors)**

## Safety

## Safety

Outstanding
Excellent
Good
Marginal
Unsatisfactory

	ITNA Completion			Required ES&H Courses			First-Aid Case Rate		Total Recordable Case Rate		DART Rate	
								Rate (per		Rate (per		Rate (per

- AD ES&H Dept takes care of the APC
- Bob Webber is the APC Safety Coordinator – let him know if you see any safety issues anywhere anytime
- APC has good safety record so far
- Please, continue to pay close attention to safety!

TD	229	231	99.1%	2,650	2,727	97.2%	6	6.40	1	1.07	0	0.00
WR	57	57	100.0%	382	391	97.7%	0	0.00	0	0.00	0	0.00
Fermilab	1,987	1,992	99.7%	23,278	23,936	97.3%	23	2.85	4	0.50	1	0.12

# Near and Far Future

- The whole field of High Energy Physics suffers:
  - FY08 budget cut: 780M\$ (PBR) to 698M\$ (omnibus)
  - SLAC B-factory closed, CESR-c to be, Tevatron in 09-10
  - ILC funding reduced 60 → 15 M\$, NOvA on hold
  - ... DoE Office HEP Director had been changed recently
- Need to develop a long-term roadmap:
  - Step 1: FNAL steering committee (2007) → Project X
  - Step 2: P5 panel (Spring 2008) → 3 scenarios
- So far the Lab program looks good, ideal path:
  - Tev thru 2010 → NOvA → Project X (2012-2017) → either Neutrino Factory or Muon Collider ~2020
- New series of reviews across the field – Summer '08



So, the situation is worrismatic:  
whom can we make resort to?





## ACCELERATOR PHYSICS CENTER

V.Shiltsev, Director  
M.Church, Deputy Director  
M.Bruce, Admin Associate  
(A.Nestander), Budget Mgr.

as of 12/01/07

### ILC Beam Physics Department

(N.Solyak), Head  
D.Bogert  
Y.Torun (FNAL/IIT)  
S.Singatulin(GS)  
(J.Volk)

#### ILC Modeling Group

M.Church (GL)  
F.Ostiguy  
(A.Valishev)

### HINS Department

R.Webber, Head  
J.P.Carneiro  
D.Johnson  
K.Koch  
R.Madrak  
E.Peoples  
H.Piekarz  
J.Steimel  
D.Wildman  
R.Zwaska  
(G.Apollinari) (B.Hanna)

### Muon Accelerator R&D Department

S.Geer, Head

#### MCTF Experiment Group

A.Jansson (GL)  
K.Yonehara  
C.Yoshikawa (GS)  
A.Kurup (ICL Fellow)  
(C.Ankenbrandt)  
(D.Broemmelsiek) (M.Hu)  
(A.Shemyakin) (M.Lamm)  
(V.Kashikhin) (E.Preby)

#### NFMCC Group

A.Bross (GL)  
A.Moretti  
D.Neuffer  
(M.Geynisman)  
(C.Johnstone)  
(A.Klebaner)  
(M.Popovic)  
(A.Tollestrup)

### US PAS Office

S.Winchester (GL)  
W.Barletta, Director (GS)  
I.Novitskaia

### Accel.Education Dept.

(V.Lebedev), Head

#### Accel.PhD Program

(A.Tollestrup, Chair)

*Grad.students (mentor)*

T.Koeth (H.Edwards)  
D.McCarron P.Spentzouris  
U.Mavric (B.Chase)  
R.Miyamoto (A.Jansson)  
A.Paytyan (H.Edwards)  
A.Poklonsky (D.Neuffer)  
W.M.Tam (G.Romanov)  
J.Keung (S.Nagaitsev)

#### Peoples Fellowship

(M.Church, Comm.Chair)

#### Lee Teng Internship

(E.Preby, Comm.Chair)

#### Accel.Summer Students

(A.Shemyakin, Prgm.Ldr.)

### LHC Accelerator Group

T.Sen (GL)  
J.Johnstone  
H.J.Kim  
J.Slaughter  
(R.Flora) (E.Gottschalk)  
(E.Harms) (E.McCrory)  
(D.McGinnis) (R.Pasquinelli)

#### Theory/Simulation Group

Yu.Alexahin (GL)  
V.Balbekov  
N.Gelfand  
E.Gianfelice-Wendt  
V.Kamerdzhev  
G.Kuznetsov(GS)  
L.Vorobiev (GS)

### Energy Deposition Group

N.Mokhov (GL)  
A.Drozhdin  
M.Kriss  
S.Striganov  
I.Rakhno (GS)  
**Exper. AAR&D Group**  
P.Piot (GL) x6389  
(L.Bellantoni) (H.Edwards)  
(R.Fiiller) (M.Wendt)  
(C.Y.Tan) (S.Nagaitsev)

#### (CPA Group of CD)

(P.Spentzouris, GL)  
(J.Amundson) (P.Lebrun)  
(L.Michelotti) (E.Stern)  
(V.Ivanov, GS) (D.Dechow, V)

March 11, 2008

APC Mini-Retreat